


Interpreting Blood Results For Nurses



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Blood Test	Abbrev.	Normal Range	Unit	Notes
Blood Coagulation Studies Blue Tube				
Prothrombin Time	PT	12 - 13	Seconds	High= should only be higher if patient is on blood thinning med such as Coumadin/Warfarin.
Partial Thromboplastin Time	PTT	30 - 40	Seconds	High= Possible blood clotting disorder. PTT level is also used to monitor Heparin Therapy.
International Normalized Ratio	INR	0.8 - 1.2		Calculated with PT test. Normal INR is 0.8 - 1.2. Normal Coumadin/Warfarin INR is 2 - 3.
D-Dimer	DDi	0 - 0.5	ng/mL	High= Indicates that there may be blood clot somewhere in body. Seen with PE, DVT, Stroke.
"ABG" / "VBG" - Arterial Blood Gas / Venous Blood Gas Use Heparin Syringe				
Potential of Hydrogen	pH	7.35 - 7.45		High= Alkalosis Low= Acidosis
Partial Pressure of CO ₂	CO ₂	35 - 45	mmHg	High= CO ₂ leads to acidosis, confusion, fatigue. BiPap machine or vent used to balance CO ₂ .
Bicarbonate	HCO ₃	22 - 26	mEq/L	High= Not enough CO ₂ in the blood. Low= indicates organ failure, usually kidney.
Saturation of Oxygen	SaO ₂	94 - 100	%	This is also measured with a pulse oximeter. 88 - 90% level seen with COPD patients.
Lactic Acid	Lactic	Arterial: 0.5 - 1.6 Venous: 0.5 - 2.2	mEq/L	High= High lactic acid is seen with patients who are in acidosis usually caused by sepsis, hypoxia, DKA or have organ failure. Can also be drawn separately in grey tube and placed on ice for lab.
Partial Pressure of O ₂	PaO ₂	80 - 100	mmHg	Low= hypoxia. It is measured in arterial blood. If widely different than SaO ₂ , check equipment.
Cholesterol / Lipid Panel Green Tube				
Low Density Lipoprotein	LDL	Below 130	g/d	High= Not good. This is the "bad" cholesterol. Can lead to hardened or clogged blood vessels.
High Density Lipoprotein	HDL	Above 50	U/L	This is the "good" cholesterol. The HDL helps remove the bad cholesterol from blood vessels.
Triglycerides	Tg	Below 150	U/L	High= Bad. Triglycerides are a type of fat. Too much can lead heart disease, diabetes.
Cholesterol, Total	Chol	Below 200	U/mL	Formula: Total HDL = LDL + 20% of Triglycerides. Optimal number is below 200.
Cardiac Enzymes / Markers Green Tube BNP				
Troponin	Trop	0 - 0.015	mEq/L	Most common blood test to determine heart attack / MI. High= Cardiac muscle damage.
Creatinine Kinase	CK-MB	0 - 3	%	Older, less reliable test than Troponin. High = Cardiac muscle or skeletal muscle damage.
Brain Natriuretic Peptide	BNP	0 - 100	pg/mL	High = Heart Failure/CHF. Look for shortness of breath, "wet" cough, swelling in legs (edema).
Kidney Function Green, Gold, or Tiger Tube				
Blood Urea Nitrogen	BUN	7 - 20	mg/dL	High = Kidney Problem. Elevated Urea in the blood means the kidneys are not filtering it out.
Creatinine	Creat	0.8 - 1.2	mg/dL	Same as above. High Creatinine in blood means the kidneys are not filtering it out.
Glomerular Filtration Rate	GFR	Greater than 90	mg/g	Used to determine stage of kidney failure. Stage 2: 60-89; 3: 3-59; 4: 15-29; 5: <15

*Important. Although these labs are color coded, lab values and tube colors can vary by institution. Always follow your facility's policy regarding lab values and order of draw.

INTERPRETING BLOOD RESULTS FOR NURSES IS A CRITICAL SKILL THAT PLAYS A SIGNIFICANT ROLE IN PATIENT CARE. BLOOD TESTS ARE OFTEN THE FIRST LINE OF INVESTIGATION TO DIAGNOSE CONDITIONS, MONITOR DISEASE PROGRESS, OR EVALUATE THE EFFECTIVENESS OF TREATMENTS. AS HEALTHCARE PROFESSIONALS, NURSES MUST UNDERSTAND HOW TO INTERPRET THESE RESULTS ACCURATELY TO PROVIDE THE BEST POSSIBLE CARE TO THEIR PATIENTS. THIS ARTICLE WILL DELVE INTO THE VARIOUS COMPONENTS OF BLOOD TESTS, HOW TO INTERPRET THEM, AND THE IMPLICATIONS FOR PATIENT CARE.

UNDERSTANDING BLOOD TESTS

BLOOD TESTS CAN BE CATEGORIZED INTO SEVERAL TYPES, EACH PROVIDING DIFFERENT INFORMATION ABOUT A PATIENT'S HEALTH STATUS. THE MOST COMMON TYPES OF BLOOD TESTS INCLUDE:

1. COMPLETE BLOOD COUNT (CBC)

A CBC MEASURES THE LEVELS OF DIFFERENT COMPONENTS OF BLOOD, INCLUDING:

- RED BLOOD CELLS (RBCs): CARRY OXYGEN FROM THE LUNGS TO THE REST OF THE BODY.
- HEMOGLOBIN (Hb): THE PROTEIN IN RBCs THAT CARRIES OXYGEN.
- HEMATOCRIT (HCT): THE PERCENTAGE OF BLOOD VOLUME THAT IS MADE UP OF RBCs.
- WHITE BLOOD CELLS (WBCs): PART OF THE IMMUNE SYSTEM, HELPING TO FIGHT INFECTIONS.
- PLATELETS: ESSENTIAL FOR BLOOD CLOTTING.

2. BASIC METABOLIC PANEL (BMP)

THE BMP MEASURES:

- GLUCOSE: BLOOD SUGAR LEVELS.
- ELECTROLYTES: SODIUM, POTASSIUM, CHLORIDE, BICARBONATE.
- KIDNEY FUNCTION: BLOOD UREA NITROGEN (BUN) AND CREATININE.

3. COMPREHENSIVE METABOLIC PANEL (CMP)

THIS PANEL INCLUDES ALL BMP TESTS PLUS ADDITIONAL TESTS FOR LIVER FUNCTION, INCLUDING:

- LIVER ENZYMES: ALANINE AMINOTRANSFERASE (ALT), ASPARTATE AMINOTRANSFERASE (AST), ALKALINE PHOSPHATASE (ALP).
- BILIRUBIN: A WASTE PRODUCT FROM THE BREAKDOWN OF RED BLOOD CELLS.

KEY PARAMETERS AND THEIR INTERPRETATIONS

UNDERSTANDING THE NORMAL RANGES AND IMPLICATIONS OF VARIOUS BLOOD TEST RESULTS IS ESSENTIAL. HERE ARE SOME KEY PARAMETERS TO CONSIDER:

1. COMPLETE BLOOD COUNT (CBC)

- LOW HEMOGLOBIN/HEMATOCRIT: MAY INDICATE ANEMIA, WHICH CAN RESULT FROM NUTRITIONAL DEFICIENCIES, CHRONIC DISEASE, OR BONE MARROW DISORDERS.
- HIGH WBC COUNT: OFTEN SUGGESTS INFECTION, INFLAMMATION, OR STRESS; MAY ALSO INDICATE LEUKEMIA OR OTHER CONDITIONS.
- LOW PLATELET COUNT: CAN INCREASE THE RISK OF BLEEDING AND MAY SUGGEST CONDITIONS LIKE THROMBOCYTOPENIA OR BONE MARROW DISORDERS.

2. BASIC METABOLIC PANEL (BMP)

- HYPERGLYCEMIA: ELEVATED GLUCOSE LEVELS MAY INDICATE DIABETES MELLITUS OR STRESS RESPONSE.
- HYPONATREMIA: LOW SODIUM LEVELS CAN RESULT FROM DEHYDRATION, KIDNEY PROBLEMS, OR HEART FAILURE, WHILE HYPERNATREMIA CAN INDICATE EXCESS FLUID LOSS OR INADEQUATE FLUID INTAKE.
- HYPERKALEMIA: INCREASED POTASSIUM LEVELS CAN LEAD TO CARDIAC ARRHYTHMIAS, OFTEN CAUSED BY RENAL FAILURE OR CERTAIN MEDICATIONS.

3. COMPREHENSIVE METABOLIC PANEL (CMP)

- ELEVATED LIVER ENZYMES: INCREASED LEVELS OF ALT AND AST SUGGEST LIVER DAMAGE OR DISEASE, WHILE ELEVATED ALP MAY INDICATE BILE DUCT OBSTRUCTION.
- HIGH BILIRUBIN LEVELS: CAN INDICATE LIVER DYSFUNCTION, HEMOLYSIS, OR BILIARY OBSTRUCTION.

FACTORS AFFECTING BLOOD TEST RESULTS

SEVERAL FACTORS CAN INFLUENCE BLOOD TEST RESULTS, AND IT IS ESSENTIAL FOR NURSES TO CONSIDER THESE WHEN INTERPRETING RESULTS:

1. PATIENT PREPARATION

- FASTING: SOME TESTS REQUIRE FASTING FOR ACCURATE RESULTS, SUCH AS GLUCOSE AND LIPID PANELS.
- MEDICATIONS: CERTAIN MEDICATIONS CAN ALTER BLOOD TEST RESULTS, INCLUDING ANTICOAGULANTS, STEROIDS, AND DIURETICS.

2. PHYSIOLOGICAL VARIATIONS

- AGE AND GENDER: NORMAL RANGES CAN VARY BETWEEN CHILDREN, ADULTS, AND ELDERLY PATIENTS. ADDITIONALLY, SOME RESULTS (LIKE HEMOGLOBIN) MAY DIFFER BETWEEN MALES AND FEMALES.
- HYDRATION STATUS: DEHYDRATION CAN CONCENTRATE BLOOD COMPONENTS, LEADING TO FALSELY ELEVATED RESULTS.

CLINICAL IMPLICATIONS OF BLOOD RESULTS

INTERPRETING BLOOD RESULTS IS NOT JUST ABOUT UNDERSTANDING NUMBERS; IT HAS DIRECT CLINICAL IMPLICATIONS. NURSES MUST BE ABLE TO IDENTIFY WHEN RESULTS INDICATE A NEED FOR FURTHER INVESTIGATION OR INTERVENTION.

1. IDENTIFYING CRITICAL VALUES

CERTAIN LABORATORY RESULTS ARE CONSIDERED CRITICAL AND REQUIRE IMMEDIATE ACTION. EXAMPLES INCLUDE:

- LOW HEMOGLOBIN (<7 g/dL): MAY NECESSITATE A TRANSFUSION.
- HIGH POTASSIUM (>6.0 mEq/L): CAN LEAD TO LIFE-THREATENING CARDIAC ARRHYTHMIAS.
- HIGH BLOOD GLUCOSE (>300 mg/dL): MAY REQUIRE IMMEDIATE INSULIN ADMINISTRATION.

2. MONITORING AND FOLLOW-UP

NURSES SHOULD ALSO UNDERSTAND THE IMPORTANCE OF FOLLOW-UP TESTING. IF INITIAL RESULTS ARE ABNORMAL, FURTHER TESTS MAY BE NECESSARY TO CONFIRM A DIAGNOSIS OR MONITOR TREATMENT EFFICACY.

3. PATIENT EDUCATION

NURSES PLAY A CRUCIAL ROLE IN EDUCATING PATIENTS ABOUT THEIR BLOOD RESULTS. THIS INCLUDES EXPLAINING WHAT THE RESULTS MEAN, POTENTIAL IMPLICATIONS FOR THEIR HEALTH, AND ANY NECESSARY LIFESTYLE CHANGES OR TREATMENTS.

CONCLUSION

INTERPRETING BLOOD RESULTS IS A FUNDAMENTAL SKILL FOR NURSES THAT REQUIRES A THOROUGH UNDERSTANDING OF VARIOUS BLOOD TESTS, THEIR COMPONENTS, AND THE IMPLICATIONS FOR PATIENT CARE. BY RECOGNIZING NORMAL RANGES, UNDERSTANDING FACTORS THAT AFFECT RESULTS, AND IDENTIFYING CRITICAL VALUES, NURSES CAN PROVIDE VALUABLE INSIGHTS INTO PATIENT HEALTH. FURTHERMORE, EFFECTIVE COMMUNICATION AND PATIENT EDUCATION ABOUT BLOOD TEST RESULTS ARE ESSENTIAL IN FOSTERING A COLLABORATIVE APPROACH TO CARE. AS HEALTHCARE CONTINUES TO EVOLVE, ONGOING EDUCATION AND TRAINING IN LABORATORY INTERPRETATION WILL REMAIN VITAL FOR NURSES AS THEY STRIVE TO ENHANCE PATIENT OUTCOMES.

FREQUENTLY ASKED QUESTIONS

WHAT IS THE SIGNIFICANCE OF ELEVATED WHITE BLOOD CELL COUNT IN BLOOD RESULTS?

AN ELEVATED WHITE BLOOD CELL (WBC) COUNT OFTEN INDICATES AN INFECTION, INFLAMMATION, OR STRESS RESPONSE. NURSES SHOULD ASSESS THE PATIENT'S CLINICAL SYMPTOMS AND CONSIDER FURTHER TESTS TO IDENTIFY THE UNDERLYING CAUSE.

HOW SHOULD NURSES INTERPRET LOW HEMOGLOBIN LEVELS?

LOW HEMOGLOBIN LEVELS CAN INDICATE ANEMIA, WHICH MAY RESULT FROM VARIOUS CAUSES SUCH AS NUTRITIONAL DEFICIENCIES, CHRONIC DISEASE, OR BLOOD LOSS. NURSES SHOULD EVALUATE THE PATIENT'S SYMPTOMS AND HISTORY TO DETERMINE APPROPRIATE INTERVENTIONS.

WHAT DOES A HIGH PLATELET COUNT SUGGEST IN A BLOOD TEST?

A HIGH PLATELET COUNT, OR THROMBOCYTOSIS, CAN SUGGEST AN UNDERLYING CONDITION SUCH AS INFLAMMATION, INFECTION, OR MYELOPROLIFERATIVE DISORDERS. NURSES SHOULD MONITOR THE PATIENT FOR SYMPTOMS RELATED TO CLOTTING AND CONSIDER CONSULTING A PHYSICIAN FOR FURTHER EVALUATION.

WHY IS IT IMPORTANT TO ASSESS ELECTROLYTE LEVELS IN BLOOD TESTS?

ELECTROLYTE IMBALANCES CAN SIGNIFICANTLY AFFECT A PATIENT'S CARDIAC, MUSCULAR, AND NEUROLOGICAL FUNCTION. NURSES MUST INTERPRET THESE LEVELS TO MANAGE CONDITIONS LIKE DEHYDRATION, RENAL FAILURE, OR HEART PROBLEMS AND ENSURE TIMELY INTERVENTIONS.

WHAT SHOULD NURSES CONSIDER WHEN INTERPRETING LIVER FUNCTION TESTS?

NURSES SHOULD CONSIDER THE PATIENT'S HISTORY, SYMPTOMS, AND MEDICATIONS WHEN INTERPRETING LIVER FUNCTION TESTS. ELEVATED LIVER ENZYMES MAY INDICATE LIVER DAMAGE OR DISEASE, REQUIRING FURTHER EVALUATION AND POSSIBLE LIFESTYLE OR MEDICATION ADJUSTMENTS.

HOW CAN NURSES IDENTIFY DEHYDRATION THROUGH BLOOD RESULTS?

NURSES CAN IDENTIFY DEHYDRATION BY LOOKING FOR ELEVATED BUN (BLOOD UREA NITROGEN) AND CREATININE LEVELS, ALONG WITH A HIGH HEMATOCRIT. THESE INDICATORS SUGGEST THAT THE KIDNEYS ARE CONCENTRATING URINE DUE TO DECREASED FLUID VOLUME.

WHAT IS THE ROLE OF NURSES IN MANAGING ABNORMAL CHOLESTEROL LEVELS FOUND IN BLOOD TESTS?

NURSES PLAY A KEY ROLE IN EDUCATING PATIENTS ABOUT LIFESTYLE CHANGES, SUCH AS DIET AND EXERCISE, TO MANAGE ABNORMAL CHOLESTEROL LEVELS. THEY SHOULD ALSO MONITOR PATIENTS FOR CARDIOVASCULAR RISK FACTORS AND

How important is it for nurses to understand reference ranges in blood tests?

UNDERSTANDING REFERENCE RANGES IS CRUCIAL FOR NURSES TO ACCURATELY INTERPRET BLOOD TEST RESULTS. IT ALLOWS THEM TO RECOGNIZE ABNORMAL VALUES, ASSESS PATIENT CONDITIONS, AND COMMUNICATE EFFECTIVELY WITH THE HEALTHCARE TEAM FOR TIMELY INTERVENTIONS.

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DE 10 BESTE pizza restaurants in Brugge - Tripadvisor

De beste pizzeria's in Brugge, België. Lees Tripadvisor-reizigersbeoordelingen van de beste pizza restaurants in Brugge en zoek op prijs, locatie en meer.

PIZZABAR ONESTO - The pizza with a story

Aan de rand van het historische Brugge vind je de kern van de Italiaanse keuken, kraakverse pizza's. Welkom bij Pizzabar Onesto! In een ongedwongen sfeer laten we je proeven van ...

Amunì | Slow Food Pizza

Voor onze pizza's worden ingrediënten gebruikt die het 'Slow Food'-label kregen. De 'Slow Food' beweging werd opgericht in 1989 als reactie op fast food, op smaakvervlakking en de ...

Domino's Pizza Brugge - Pizza Delivery & Takeaway

Dominos Pizza Bestel Online Menu Aanbiedingen Newsletter Contact Veelgestelde vragen & contactformulier Hoofdkantoor Winkel gegevens Beheer je voorkeuren Franchise Info ...

Popular Pizza - Eten bestellen in Brugge

Bekijk het menu van Popular Pizza uit Brugge en bestel gelijk je favoriete gerechten online. Geniet binnen minuten dankzij van een heerlijke maaltijd.

Pizza Di Trevi Brugge - Lekkerste pizza van Brugge!

Wij staan altijd klaar om u zowel telefonisch als in onze resto te bedienen met onze heerlijke Pizza's en meer en dat ook steeds met de glimlach natuurlijk. Onze ervaren koks en delivery ...

Pizzeria Da Mario te Brugge | kwalitatieve Pizza's in Brugge

Pizzeria Da Mario te Brugge staat gekend om zijn kwalitatieve dunne bodem pizza's in het hartje van de Brugse binnenstad op de markt.

De beste pizzeria's in Brugge - TOP 10 [2024] - deflect.be

Feb 16, 2024 · Ontdek in passieve vorm de top 10 beste pizzeria's in Brugge voor 2024, zorgvuldig samengesteld voor liefhebbers van Italiaanse gerechten. Bezoek nu deze ranglijst.

We hebben een groot en divers aanbod aan restaurants die je mogelijk interesseren op basis van je zoekopdracht. De beste pizza in Brugge vind je binnen 2 klikken op TheFork. Lees de ...

Bestel pizza in Bruges 8000 online via Takeaway.com. Food Tracker® en diverse betaalmogelijkheden. Snel en gemakkelijk thuisbezorgd bij jou!

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